

1 of 1 DOCUMENT

UNITED STATES PATENT AND TRADEMARK OFFICE GRANTED PATENT

**5991542**

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November 23, 1999

Storage volume handling system which utilizes disk images

**REISSUE:**

November 21, 2001 - Reissue Application filed, Ex. Gp.: 2652; Re. S.N. 09/990,887 , (O.G. May 28, 2002)

**INVENTOR:** Han, Byron B. - Honolulu, United States of America (US) ; Kateley, James F. - San Jose, United States of America (US) ; Murphy, Colm - Tower Blarney, Ireland (IE) ; Fitzgerald-Smith, Kenneth - Passage West, Ireland (IE)

**APPL-NO:** 713500 (08)

**FILED-DATE:** September 13, 1996

**GRANTED-DATE:** November 23, 1999

**ASSIGNEE-PRE-ISSUE:**

November 12, 1996 - ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS)., APPLE COMPUTER, INC. ONE INFINITE LOOP CUPERTINO, CALIFORNIA, 95014, Reel and Frame Number: 008249/0831

**ASSIGNEE-AT-ISSUE:**

Apple Computer, Inc., Cupertino, CALIFORNIA , United States of America (US)

**ASSIGNEE-AFTER-ISSUE:**

April 24, 2007 - CHANGE OF NAME (SEE DOCUMENT FOR DETAILS)., APPLE INC., ONE INFINITE LOOP, CUPERTINO, CALIFORNIA, UNITED STATES OF AMERICA (US), 95014, Reel and Frame Number: 019235/0583

**CORE TERMS:** disk, computer, storage, format, software, driver, user, network, layer, compressed, stored, installation, disk drive, floppy disks, remote, logical, chunk, operating system, downloaded, controller, installer, server, tome, computer system, installed, checksum, script, target, electronic, protocol

**ENGLISH-ABST:**

Disk images, and the like, are used to emulate storage volumes for the distribution of computer software. An image of a data storage volume, such as a hard disk drive, is stored in a file having a format that enables it to exhibit a behavior which is the same as the storage volume itself. The image files are accessed by means of an associated driver which can support a variety of different file system protocols, thereby permitting the files themselves to be independent of the format requirements of particular file systems. The data in the image file can be compressed in a manner such that

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a storage volume being emulated appears to be of a specified size, while actually requiring less space to store its contents. With these properties, the image files can be mounted in the manner of a hardware storage device, and large files can be readily transmitted and downloaded in an electronic format. Since the files are preserved in their original form, end-to-end verification remains possible, to ensure the integrity of the downloaded files. Multiple images can be combined into a single tome, for installation at a remote site using a one-button approach.

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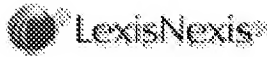
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E1	1	PN=US 5991417
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E3	0	*PN=US 5991542
E4	2	PN=US 5991735
E5	3	PN=US 5991739
E6	10	PN=US 5991791
E7	3	PN=US 5991801
E8	4	PN=US 5991843
E9	4	PN=US 5991885
E10	1	PN=US 5991948

**Storage volume handling system which utilizes disk images**  
**US5991542**

<ul style="list-style-type: none"> <li><b><u>Patent Assignee</u></b> APPLE</li> <li><b><u>Inventor</u></b> HAN BYRON B; KATELEY JAMES F; MURPHY COLM; FITZGERALD-SMITH KENNETH</li> <li><b><u>International Patent Classification</u></b> G06F-003/06;G06F-009/445;G06F-015/16</li> <li><b><u>US Patent Classification</u></b> 717167000</li> </ul>	<ul style="list-style-type: none"> <li><b><u>Publication Information</u></b> US5991542 A 19991123 [US5991542]</li> <li><b><u>Priority Details</u></b> 1996US-0713500 19960913</li> </ul>
<ul style="list-style-type: none"> <li><b><u>Fampat family</u></b> US5991542                      A            19991123                      [US5991542]</li> </ul>	

- **Abstract:**

(US5991542)

Disk images, and the like, are used to emulate storage volumes for the distribution of computer software. An image of a data storage volume, such as a hard disk drive, is stored in a file having a format that enables it to exhibit a behavior which is the same as the storage volume itself. The image files are accessed by means of an associated driver which can support a variety of different file system protocols, thereby permitting the files themselves to be independent of the format requirements of particular file systems. The data in the image file can be compressed in a manner such that a storage volume being emulated appears to be of a specified size, while actually requiring less space to store its contents. With these properties, the image files can be mounted in the manner of a hardware storage device, and large files can be readily transmitted and downloaded in an electronic format. Since the files are preserved in their original form, end-to-end verification remains possible, to ensure the integrity of the downloaded files. Multiple images can be combined into a single tome, for installation at a remote site using a one-button approach.

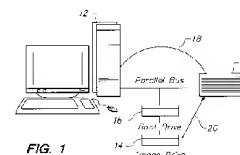


FIG. 1

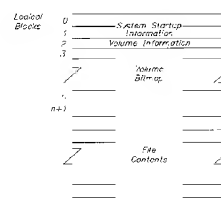


FIG. 2

**Action Taken**

(US5991542)

LEGAL DETAILS FOR US5991542

EED=2016-09-13; STATE=ALIVE; STATUS=GRANTED

AD=1996-09-13 CO=US/APP SI=Pos EG=EXM

Application details

APC=US US71350096 APD=1996-09-13 XAP=1996US-08713500

AD=1996-11-12 CO=US/AS EG=NMC EG=RAS

Assignment

OWNER:APPLE COMPUTER, INC., CALIFORNIA

EFFD=1996-10-01 EFFD=1996-10-14

ASSIGNMENT OF ASSIGNORS INTEREST;ASSIGNORS:HAN, BYRON B.;KATELEY, JAMES F.;MURPHY, COLM;AND OTHERS;REEL/FRAME:008249/0831;SIGNING DATES FROM 19961002 TO 19961015.

AD=1999-11-23 CO=US/A SI=Pos EG=PIF

Patent

PC=US PN=US5991542 KD=A PD=1999-11-23 XPN=US5991542

AD=2001-04-17 CO=US/CC EG=COR

Certificate of correction

AD=2002-05-28 CO=US/RF EG=OPP

Reissue application filed

Reissue appl. filed

EFFECTIVE DATE: EFFD=2001-11-21

AD=2003-05-08 CO=US/FPAY SI=Pos EG=PIF

Fee payment

PAYMENT YEAR: YR=4

AD=2007-04-24 CO=US/AS EG=NMC EG=RAS

Assignment

OWNER:APPLE INC., CALIFORNIA; EFFECTIVE DATE: EFFD=2007-01-09

CHANGE OF NAME;ASSIGNOR:APPLE COMPUTER, INC.;REEL/FRAME:019235/0583.

AD=2007-04-24 CO=US/AS EG=NMC EG=RAS

Assignment

OWNER:APPLE INC., CALIFORNIA; EFFECTIVE DATE: EFFD=2007-01-09

CHANGE OF NAME;ASSIGNOR:APPLE COMPUTER, INC.;REEL/FRAME:19235/583.

AD=2007-04-24 CO=US/AS EG=NMC EG=RAS

Assignment

OWNER:APPLE INC., CALIFORNIA; EFFECTIVE DATE: EFFD=2007-01-09

CHANGE OF NAME;ASSIGNOR:APPLE COMPUTER, INC.;REEL/FRAME:019235/0583.

AD=2007-04-27 CO=US/FPAY SI=Pos EG=PIF

Fee payment

PAYMENT YEAR: YR=8

AD=2011-04-20 CO=US/FPAY SI=Pos EG=PIF

Fee payment

PAYMENT YEAR: YR=12